

Our Work – Investment or Cost

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Lake Ahquabi is a 108 acre man-made lake in Warren County built in 1935. It supported a relatively stable fishery until the 1960's. Since then, the lake had been totally renovated twice and still provided a poor fishery. Park use decreased from 550,000 visitor days per year in 1974 to 150,000 in 1986. The soil loss from the watershed of Lake Ahquabi in 1990 was 11.98 to 1.19 tons/ac/yr. Bachman (1990) found the sediment delivery to the lake was 8.8 acre ft/yr. Laube (1991) estimated the lake would fill from sediment in 88 years.

Renovation of the lake and improvements in the lake's watershed began in 1993 and was completed in 1997. Work consisted of the construction of five new sediment/nutrient basins and an increase in the size of an existing basin. Dredging removed nearly 370,000 cubic yards of silt. The spillway was reconstructed with a new water control structure and 5,000 feet of shoreline was rip-rapped to reduce shoreline erosion. The new Lake Ahquabi was stocked with fish in 1995 and 1996 and a 1996 fall population estimate revealed two abundant bluegill year classes, 21,000 largemouth bass and numerous black crappie and channel catfish.

In 1997, a study was initiated to determine the water quality in Lake Ahquabi and to compare the results with pre-restoration monitoring and the effects on the fishery. Water samples taken from 1997 through 2004 show significant ($P<0.05$) reductions of mean Chlorophyll A, Total Nitrogen, Total Phosphorus, and Total Suspended Solids (TSS) compared to concentrations recorded at the same sampling sites in 1990. Mean TSS concentration in 1990 was 33.5 Mg/l, 7.2 Mg/l in 1997, 7.3 Mg/l in 1998, 8.2 Mg/l in 1999, 6.75 Mg/l in 2000, 8.1 Mg/l in 2001, 8.7 Mg/l in 2002, 5.8 Mg/l in 2003, and 8.0 Mg/l in 2004. Secchi disc depths averaged 19.5 inches in 1990, 52 inches in 1997, 42 inches in 1998, 39 inches in 1999, 55 inches in 2000, 47 inches in 2001, 65 inches in 2002, 75 inches in 2003, and 48 inches in 2004. The Secchi disc values from 1997 through 2004 were significantly higher ($P<0.05$) than values in 1990.

Population estimates made in 2004 were 4,400 age I largemouth bass, 25,300 age II and older largemouth bass, 145,000 age II and older bluegill, and 4,600 age II and older channel catfish. Biomass estimates were 138 lbs/ac of largemouth bass, 297 lbs/ac of bluegill, 59 lbs/ac of redear sunfish, and 89 lbs/ac of channel catfish. Fishing pressure determined from a creel survey in 2004 was 211 Hrs/acre fished by 11,693 anglers, while the mean catch rate was 2.16 Fish/hr. Fishing pressure in 1990 from estimates of a fisheries biologist was 47 Hrs/ac by 5,300 anglers. Total park use in 1990 was 118,351 visitor days while in 1997 park use was 135,724 visitor days and increased to 622,000 visitor days in 2004.